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(54) **High speed data transfer over twisted pair cabling**

(57) A method provides for a first network node in a plurality of network nodes to transmit a data packet to a hub. The hub and the network nodes are interconnected within a local network system. Control signals are exchanged between the first network node and the hub. The exchange of control signals is done in a first signal frequency range. A data packet is sent from the first network node to the hub. The data packet is sent using data signals within a second signal frequency range. The first signal frequency range and the second signal frequency range do not overlap.



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# EUROPEAN SEARCH REPORT

Application Number  
EP 93 11 7983

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	EP-A-0 495 575 (NAT SEMICONDUCTOR CORP) 22 July 1992 * page 7, line 15 - page 19, line 29; figure 8 *	1-24, 29-31	H04L12/44 H04L5/26 H04L5/14 H04L25/03 H04L25/49
A	WO-A-81 03559 (WESTERN ELECTRIC CO) 10 December 1981 & US-E-33 380 (CHENG-QUISPE ET AL) 9 October 1990 * column 4, line 8 - line 68; figures 1-4,6 *	1-24, 29-31	
A	EP-A-0 471 945 (DIGITAL EQUIPMENT CORPORATION) 26 June 1992	1-24, 29-31	
D	& US-A-5 119 402 (GINZBURG SIMON A ET AL) 2 June 1992		
P,A	US-A-5 216 714 (SPEISER BENJAMIN T) 1 June 1993 * abstract *	25-28	
A	PROCEEDINGS OF THE PACIFIC RIM CONFERENCE ON COMMUNICATIONS, COMPUTERS AND SIGNAL PROCESSING, VICTORIA, JUNE 1 - 2, 1989, no. -, 1 June 1989 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, pages 31-35, XP 000077432 FAIR I J ET AL 'GUIDED SCRAMBLING: A NEW LINE CODING TECHNIQUE FOR OPTICAL FIBER COMMUNICATION SYSTEMS' * abstract; table 1 *	25-28	TECHNICAL FIELDS SEARCHED (Int.Cl.5) H04L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 October 1995	Examiner Revellio, H.S.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons - - - - - &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01.92 (P04C01)



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	IEE PROCEEDINGS SECTION A A I, vol. 132, no. 2, March 1985 - April 1985 OLD WOKING, GB, pages 68-72, WOOD, I.C. ET AL. 'Design techniques for a 565/680 Mbit/s coder/decoder' * page 68; figure 2 * ---	25-28	
A	EP-A-0 303 407 (HEWLETT PACKARD CO) 15 February 1989 * abstract; figure 1 * ---	25-28	
A	R.F. DESIGN, APRIL 1992, USA, vol. 15, no. 4, ISSN 0163-321X, page 45, 47, 50, 52 MOUINE J 'A simple algebraic and analogical approach to a scrambler/descrambler' -----	25-28	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION - A PRIORI -

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-24, 29-31: Network exchanging control and data packets between hub and network nodes
2. Claims 25-28 : Scrambling of data for transmission on network

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respects of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EP 93 11 7983 -B-

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1. Claims 1-24,29-31: Network exchanging control and data packets between hub and network nodes
2. Claims 25-28 : Scrambling of data for transmission on network